

Claims

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1. Method to denoise a stereo signal comprising a stereo sum signal and a stereo difference signal, **characterized by** a frequency selective stereo to mono blending based on the masking effect of the human auditory system.
2. Method according to claim 1, **characterized by** using noise included in the stereo audio signal as probe signal and an audio component of the audio signal as mask signal.
3. Method according to claim 1 or 2, **characterized by** determining the frequency selectivity by dividing the stereo difference signal into subbands.
4. Method according to claim 3, **characterized by** determining a number of subbands according to the properties of the human auditory system.
5. Method according to claim 3 or 4, **characterized by** determining a width of a respective subband according to the properties of the human auditory system.
6. Method according to claim 3, 4 or 5, **characterized by** attenuating every subband of the stereo difference signal which noise component lies above a signal component of a subband of the audio signal corresponding to that of the stereo difference signal so that the noise component of the subband of the stereo difference signal lies below the respective absolute value of masking.
7. Method according to claim 6, **characterized in that** an attenuation factor of a respective subband is determined by dividing the signal component of the subband of the audio signal corresponding to the subband of the stereo difference signal by the noise component of the subband of the stereo difference signal.
8. Method according to claim 7, **characterized by** limiting the attenuation factor of a respective subband to values between 0 and 1.
9. Method according to claim 7 or 8, **characterized by** subtracting a respective influence factor (K_0, \dots, K_N) from the attenuation factor of a respec-

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13. Method according to claim 12, **characterized by** weighting the squared subband signal of the in phase component of the stereo difference signal with a weighting factor (W_0, \dots, W_N) according to the fieldstrength of the received fm signal, a volume of output sound, a background noise level, the signal amplitude power of the audio signal, a speed of a vehicle within which the stereo signal is reproduced, and/or the ratio of the signal power to the noise power of the difference signal of the corresponding subband.

35 14. Computer program product, comprising computer program means adapted to perform the method steps as defined in anyone of claims 1 to 13 when it is executed on a computer or digital signal processor.

16. Noise reducer according to claim 15, **characterized in that** said weighting factor determination unit comprises

17. Noise reducer according to claim 16, **characterized in that** said weighting factor determination unit comprises

18. Noise reducer according to claim 15, 16 or 17, **characterized in that**
said weighting factor determination unit comprises

19. Noise reducer according to claim 18, **characterized in that** said weighting factor determination unit comprises

- a respective first rms determinator (9) receiving a respective output signal of

5 20. Noise reducer according to claim 19, **characterized in that** said weighting factor determination unit comprises

15 21. Noise reducer according to anyone of claims 16 to 20, **characterized in**
1 **that** said weighting factor determination unit comprises

22. Noise reducer according to claim 18, **characterized in that** said weighting factor determination unit comprises

23. Noise reducer according to claim 22, characterized in that said weighting factor determination unit comprises

35 - a respective third multiplier ($13_0, \dots, 13_N$) to determine the signal component of each of the subbands of the stereo signal by weighting the respective output signal of the first filterbank (1) with a weighting factor (W_0, \dots, W_N) according to the fieldstrength of the received fm signal, a volume of output sound, a background noise level, the signal amplitude power of the audio signal, a

1 speed of a vehicle whithin which the stereo signal is reproduced, and/or the
ratio of the signal power to the noise power of the difference signal of the cor-
responding subband.

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